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CONTENTS

Pages

Antimalaria co-ordination in Asia 3
Accidental death among children and adolescents 6

Epidemiological and Statistical Information
Mortality from arteriosclerosis 10

Reports of Expert Groups
Veterinary public health 12
Diagnosis and typing in leptospirosis 14

Notes and News
Health services in the Seychelles 15
Antituberculosis campaign in the Sudan 16
African seminar on vital and health statistics 16
World Health Day 1957 17
Mental health work in Jordan 17
Africa lacks nurses 17
Death of Dr Louis Findlay 18
Appointment of new WHO Representative to UNRWA 18

Review of WHO Publications 19

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SCHEDULE OF MEETINGS

7-12 January	**Standing Committee of the Executive Board on Administration and Finance, Geneva**
14-20 January	**WHO Tuberculosis Workers' Conference, New Delhi**
15-26 January *	**Nineteenth session of the Executive Board, Geneva**
21-26 January	**Seminar on Application of International Sanitary Regulations, Maracay**
31 March-13 April	**Regional Training Course on Rabies, Caracas**
7 May-24 May *	**Tenth World Health Assembly, Geneva**
27-31 May *	**Twentieth session of the Executive Board, Geneva**

* Termination dates are tentative

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ANTIMALARIA CO-ORDINATION IN ASIA

What may prove to be a significant step forward in Asia's fight against malaria was taken in Saigon in November 1956, when the first meeting of the Antimalaria Co-ordination Board was held. Here, for the first time, Government representatives from the Board's five Member States (Burma, Cambodia, Laos, Thailand and Viet-Nam) charted out a course which is designed to lead towards closer co-ordination between the participating countries and the establishment of permanent antimalaria services with adequate support to ensure their success.

The Antimalaria Co-ordination Board came into being as a direct result of a recommendation made by the WHO-sponsored Inter-country Malaria Conference which was held in Phnom-Penh in January 1956. The report of the Board's first meeting reveals that Member States have all made positive progress in national antimalaria work, although, as is understandable, the antimalaria services are in different stages of development. The programmes, however, in all the participating countries are similar in planning for malaria eradication by nation-wide house-spraying campaigns, directed principally against *Anopheles minimus* as their common major vector of malaria. All countries report that the use of DDT, applied with compression sprayers, has been generally effective. However, in some areas it is proposed that the spraying campaigns will be supplemented by a programme of malaria treatment. Large-scale activities are also planned in technical surveys for guidance and evaluation, technical training and public information.

In Thailand a permanent division of malaria control in the national public health services has been established and the house-spraying campaign, begun in 1950, has now reached virtually all malarious areas throughout the country. Similarly, Burma has a well-organized antimalaria service and the campaign there is expected to cover practically all malarious areas in 1957. Cambodia, Laos, and Viet-Nam are at present in the early phase of establishing permanent services. The present status of the antimalaria programme is revealed by the following table, taken from the Board's report:

Country	*Total population*	*Population in malarious areas*	*Population in areas given protection*
Burma	18 000 000	8 000 000	6 300 000
Cambodia	4 500 000	800 000	411 000
Laos	3 000 000	2 000 000	*
Thailand	20 000 000	11 000 000	10 600 000
Viet-Nam	12 100 000	4 500 000	*
Total	57 600 000	26 300 000	17 311 000

* Newly planned malaria eradication programmes are just beginning in Laos and Viet-Nam.

The detailed results obtained by the various Member States show that considerable progress has been made towards malaria eradication. Burma and Thailand have had excellent results in the reduction of *A. minimus* and malaria in practically all of the areas DDT-sprayed for about three successive years. Cambodia and Viet-Nam also report excellent results in the reduction of malaria, following DDT house-spraying campaigns, although, in certain areas, population movements have created special control problems. Laos is now entering upon a newly-revised programme of malaria eradication; conditions are generally similar to those in Thailand, with limited areas experiencing some of the problems associated with Cambodia and Viet-Nam.

Planning long-term programmes

Although these results, achieved on a national scale, are eminently satisfactory, the report emphasizes that malaria eradication, to be effective, requires permanent national antimalaria services with well-

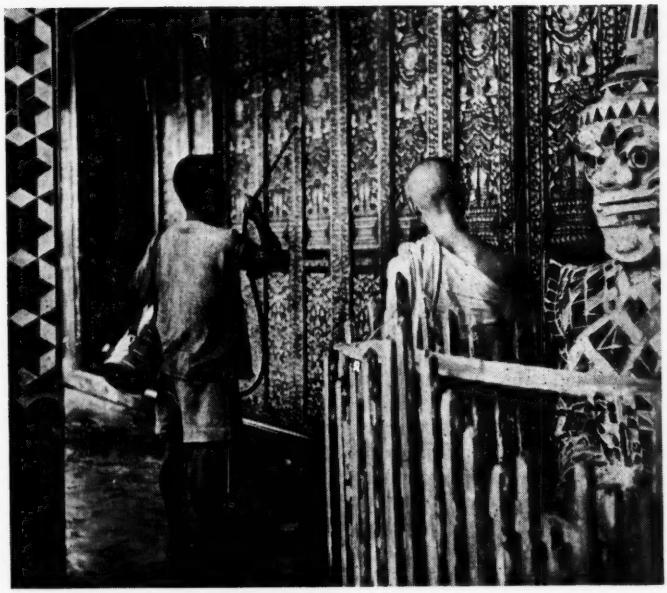
developed plans for an intensive campaign of relatively few years to eliminate the disease, followed by a long-term programme to prevent its reappearance. Provision must also be made for adequate staff and budget to implement both phases of any eradication programme. The report refers to difficulties experienced by the five countries in recruiting and retaining antimalaria workers and, also, the budgetary problems which are inescapable in such large-scale field programmes. However, as the Board points out, the present time is particularly favourable for nationwide eradication campaigns when assistance from WHO, the United Nations, and the United States International Cooperation Administration is available.

Quite apart from the problems relating to the over-all management and control of malaria eradication campaigns, there are also certain special difficulties which apply particularly to the five countries concerned. One of these is the practice of agricultural workers occupying temporary shelters in plantations during the periods of cultivation. In these shelters they are exposed to malaria and it is extremely difficult to locate and spray such temporary dwellings. The structures, also, are usually too open for effective sprayed surfaces on which the malaria vector may rest. Another problem is that of transportation, as it is found that in parts of Cambodia the most technically effective period for house spraying unfortunately coincides with the most unfavourable season for field operations, due to weather conditions.

Resistance of malaria vectors to insecticides

In discussing the question of vector problems, the Board's report supplies some interesting information. None of the participating countries, it is stated, found evidence

Antimalaria measures in Thailand. Searching for larvae in irrigation ditches in the Chiengmai Valley



Spraying the walls of a Thai temple

of resistance in any of its actual or potential malaria vector species. However, *A. sundaicus* is involved in malaria transmission in coastal areas of all the five countries, with the exception of Laos. This species was shown in certain parts of Indonesia to have a certain resistance to DDT, although it remains susceptible to control by dieldrin. *A. leucosphyrus* has recently been found infected in two limited forested areas of Thailand. This species has also been incriminated as a malaria carrier in Burma and is considered a possible vector in Cambodia, Laos and Viet-Nam. The report stresses that it should be given careful attention in work aimed at malaria eradication in the Member countries.

Since the Phnom-Penh Conference in January 1956, various of the Board's Members have taken steps towards co-ordination of antimalaria work. For example, representatives of Burma and Thailand met at Chiengmai in August 1956 in order to co-ordinate antimalaria work along their common frontier. Laos and Thailand are also co-ordinating antimalaria activities, with Thailand supplying technical training and consultation in the newly-revised Laos malaria eradication project. Cambodia and Viet-Nam are also developing plans for further co-ordination work with neighbouring countries.

In connexion with inter-country co-ordination, the Board's report points out that it is essential to develop definite time schedules in the national antimalaria operations which will result in bringing adequate protection to both sides of a frontier simultaneously, particularly at crucial traffic points. The Board also noted that it was of considerable interest to know precisely when the entire protection of all malarious areas could be anticipated in neighbouring countries.

At the conclusion of the Antimalaria Co-ordination Board's meeting, various resolutions were adopted, designed to implement and co-ordinate antimalaria work in the five countries. These dealt with, inter alia: the recruitment and training of malaria workers, the establishment of effective malaria reporting systems, the standardization of

procedures and the exchange of information, the proposed yearly meetings of the Board and co-ordination with WHO and, finally, a resolution extending an invitation to the Government of the Federation of Malaya, through WHO, to become a member of the Board. The next planned meeting of the Board will be in December 1957 in Bangkok at the invitation of the Government of Thailand.

ACCIDENTAL DEATH AMONG CHILDREN AND ADOLESCENTS

Accidental death is nowadays of increasing concern to public health authorities. Among children and adolescents it often rates as the leading cause of death, primarily because preventive medicine has succeeded in lowering the loss of life which previously occurred through infectious and parasitic diseases. This problem of accidental death in the younger age-groups has led to a desire for international investigation with the object of devising effective methods of prevention. Until recently, comprehensive data on accidents in general were lacking, and when the problem was raised in WHO it was felt that adequate statistical information on accidents as a factor of mortality was the first essential. Accordingly, WHO inaugurated a statistical investigation in a number of countries. Information thus compiled has been sifted and analysed by three members of the WHO Secretariat in an article entitled " Accident Mortality Among Children ", which appears in the current issue of the *Bulletin*.[1]

With the proviso that statistical information of this type can only serve to give a partial picture of the whole question of accident causation, the authors do, nevertheless, point to certain trends which emerge from the material examined. It is noteworthy that accident mortality among males is consistently higher than among females, with the exception of the two extremes of life where other factors come into play. Noteworthy also is that between the ages of 15 and 25 the male accident death-rate in Australia, Canada, Sweden, Switzerland and the USA exceeds the female death-rate from *all* causes, and it is thought that traffic accidents involving young men provides the explanation.

Accidents and working life

The economic and social significance of higher accident rates should not be overlooked. When mortality figures are expressed in terms of " working life " lost, accident ranks at the top together with heart disease, cancer and pneumonia. Examples show that in the year 1945 in the United States, working years lost through accidental death were calculated at 1 750 000 as compared with 1 680 000 for heart diseases, 1 100 000 for pneumonia, and 1 040 000 for cancer. Statistics for England and Wales for the year 1954 show that accident moved up to third place on the basis of " working life ". Such causes of death as heart disease and cancer, which account for more deaths at all ages than do accidents, may nevertheless be less important when judged on the basis of working life, as on the average the victim of a fatal accident is younger at the time of death than the heart or cancer patient.

The relation of accident death-rates to over-all death-rates in the 1-19 age-group has been compared for 12 representative countries and the detailed statistics appear as Fig. 1 and Table I. The deductions which can be drawn from these statistics are illuminating. For example, in 9 of the 12 countries the accident mortality rate is higher than all other causes of death. Of the remaining three countries two have accident mortality in second place. In the diagram it is sufficiently obvious that the accident fatality sector for all countries is large in proportion to the remainder of the circle.

[1] Swaroop, S., Albrecht, R. M. & Grab, B. (1956) *Bull. Wld Hlth Org.*, 1956, 15, 123-163

FIG. 1. PERCENTAGE OF DEATHS FROM THE FOUR LEADING CAUSES TO TOTAL DEATHS IN THE AGE-GROUP 1-19 YEARS IN TWELVE COUNTRIES, 1951-53

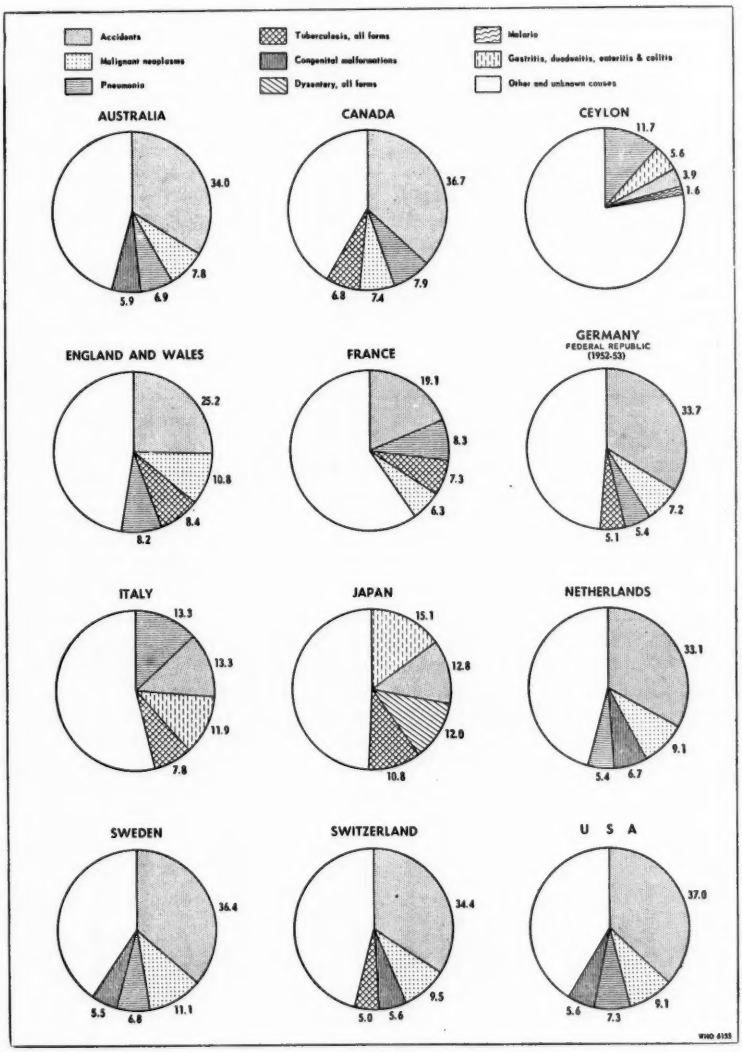


TABLE I. PERCENTAGE OF DEATHS FROM VARIOUS CAUSES TO TOTAL DEATHS IN THE AGE-GROUP 1-19 YEARS IN TWELVE COUNTRIES, 1951-53

International Abbreviated List	Causes of death (Sixth Revision, 1948)	Australia	Canada	Ceylon	England and Wales	France	Germany, Federal Republic *	Italy	Japan	Netherlands	Sweden	Switzerland	USA
B1+B2	Tuberculosis, all forms	1.4	6.8	1.2	8.4	7.3	5.1	7.8	10.8	3.4	2.4	5.0	2.7
B6	Dysentery, all forms	0.1	0.2	1.2	0.1	0.0	0.1	0.0	12.0	0.2	—	0.0	0.3
B8	Diphtheria	1.4	0.4	0.5	0.2	0.7	1.8	3.2	0.7	4.8	0.1	0.9	0.4
B12	Acute poliomyelitis	3.3	2.5	0.2	1.4	0.8	2.2	0.8	0.4	0.7	1.8	2.3	2.5
B16	Malaria	0.0	—	1.6	0.0	0.0	—	0.0	0.0	—	—	—	0.0
B18	Malignant neoplasms, including neoplasms of lymphatic and haematopoietic tissues	7.8	7.4	0.2	10.8	6.3	7.2	4.2	1 3	9.1	11.1	9.5	9.1
B23	Non-meningococcal meningitis	1.5	1.6	0.5	0.9	2.9	1.7	1.8	2.3	1.1	1.0	1.2	1.3
B31	Pneumonia	6.9	7.9	11.7	8.2	8.3	5.4	13.3	9.9	5.4	6.8	3.6	7.3
B34	Appendicitis	1.2	1.3	0.0	2.4	1.4	3.2	1.5	0.7	1.3	2.3	3.3	0.9
B36	Gastritis, duodenitis, enteritis and colitis	3.4	2.3	5.6	1.6	2.0	1.4	11.9	15.1	1.1	1.2	2.6	2.0
B38	Nephritis and nephrosis	2.3	1.8	1.5	2.4	1.3	1.5	2.6	2.9	1.3	1.7	1.7	2.2
B41	Congenital malformations	5.9	4.4	0.0	6.2	2.0	2.9	2.2	0.8	6.7	5.5	5.6	5.6
BE47+ BE48	**All Accidents**	**34.0**	**36.7**	**3.9**	**25.2**	**19.1**	**33.7**	**13.3**	**12.8**	**33.1**	**36.4**	**34.4**	**37.0**
	Other or unknown causes	30.8	26.6	71.8	32.3	47.7	33.9	37.3	30.4	31.7	29.7	30.0	28.8
B1-BE50	All causes	100	100	100	100	100	100	100	100	100	100	100	100

* For the years 1952-53 only

Traffic and drowning deaths

Coming to particular types of fatal accidents, an examination of the figures available shows that transport and drowning constitute the two most important categories in the 1-19 age-group. With the former, deaths from motor vehicle accidents form the major part. However, it is not altogether surprising that the figures differ from country to country, although perhaps it is more surprising that they differ to a greater degree by age and sex. In Australia, Canada, England and Wales, Germany, Sweden, Switzerland and the United States of America, motor vehicle accidents take the lead for both sexes. Whereas in Japan and Ceylon, drowning is the chief cause of accidental death.

If these statistics are broken down by age-group it is revealed that drowning and transport accidents vary in prevalence according to age. For instance, in Australia, motor vehicle accidents only come first in the male age-groups of 5-9 and above. The same is true for Germany, Italy, the Netherlands and Switzerland. In Japan, however, where drowning, it will be recalled, is the chief cause of accidental death, it only takes this place in the first three male age-groups—1-4, 5-9, 10-14.

Environment also plays its special role in accidental death among children. In Switzerland and Italy, for example, accidental falls are relatively more important than in the other countries studied. There is little reason to doubt that the reason lies in the mountainous nature of the terrain. In Ceylon, England and Wales, Canada and the United States, deaths resulting from fire or explosion are numerous.

Motor accidents limit gains

Although it might be concluded from what has already been said that there has been a rise in the accident rate for the 1-19 age-group, this is not actually true. Indeed, an examination of the death-rate statistics from all causes, including accidents, in the countries surveyed shows that there has been a considerable over-all fall since 1931. In most of them the accident mortality rate also fell, although in some there was no appreciable change. In general terms it can be said that accidents are becoming a relatively important cause of death among children, primarily because of the conquest of other causes of death, but partly also because the rising tide of motor vehicle accidents is limiting the gains made elsewhere.

Although motor traffic is increasing, fortunately the motor vehicle accident death-rate for the 1-19 age-group has not increased in the same proportion. However, the problem is clearly not under control. While it is correct to state that in absolute magnitude accidental deaths are decreasing in most countries, it is also true that the rate is not decreasing as fast as for many other causes of death. There is, therefore, no ground for complacency, but there is obviously a need to determine effective and practical means of accelerating the decrease in all forms of accidental death.

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* For the years 1952-53 only

Epidemiological and Statistical Information

MORTALITY FROM ARTERIOSCLEROSIS

Deaths caused by arteriosclerosis are becoming increasingly numerous in practically all countries. This is in contrast to the decrease in mortality caused by other diseases, in particular, those of an infectious nature. One of the principal reasons for this increase is the general lengthening of the human life-span coupled with the fact that, as arteriosclerosis affects elderly persons in the main, a much larger number of people are exposed to risk than was formerly the case. Thus with old people there is found to be a kind of " ageing " of the circulatory system which is thought to be to a certain extent responsible for the increased frequency of cardiovascular diseases caused by " wear and tear ". Furthermore, improved methods of diagnosis and the spread of medical services are causing a gradual decrease in the proportion of deaths attributed to " senility " or to ill-defined and unknown causes. This explains, at least in part, the increased mortality from certain complaints such as cancer and heart disease.

The whole question of mortality due to arteriosclerosis is therefore of topical interest and a recent issue of the WHO *Epidemiological and Vital Statistics Report* [1] has been devoted to the subject. This analysis has given the statistical data for the years 1952, 1953 and 1954, based on the classification established by the sixth revision of the International Lists of Causes of Death (1948). A previous issue of the *Report* [2] dealt with deaths from vascular lesions affecting the central nervous system and from diseases of the circulatory system. However the present analysis is more restricted and under the designation there have only been included the various complaints appearing in the International Lists, as follows:

(1) arteriosclerotic heart disease, including coronary disease,

(2) chronic endocarditis not specified as rheumatic,

(3) other myocardial degeneration,

(4) general arteriosclerosis.

The conditions included in each of these classifications are given in detail in the *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death.*

Major cause of death

The tables published in the *Report* show that, without any doubt, arteriosclerosis is one of the main causes of death for persons over 40 years of age. Fairly large differences in the rates show between countries and also between the sexes, but in general rates are higher for men than for women. In most of the countries considered, deaths due to arteriosclerosis represent between 20% and 40% of all deaths for persons above the age of 40. As can be seen from Table I the percentage varied in 1954 between 6.4% and 40.2% for males, and between 4.8% and 33.9% for females. This wide difference may be due in part to the fact that in certificates for deaths involving heart disease arteriosclerosis is not always mentioned even though it has been present.

Mortality rates from all forms of arteriosclerosis show considerable, though gradual, increases with age. They may be as much as ten times higher for men in the 80-84-year group as compared with the 60-64, and up to fifteen times higher for women. Coronary

[1] *Epidem. vital. Statist. Rep.*, 1956, 9, 537-594 (No. 10)
[2] *Epidem. vital. Statist. Rep.*, 1955, 8, 435-466 (No. 10)

TABLE I. DEATHS FROM ALL FORMS OF CARDIOVASCULAR DISEASE AND ARTERIOSCLEROSIS EXPRESSED AS PERCENTAGES OF TOTAL DEATHS ABOVE THE AGE OF 40 IN 1954

Country	Cardiovascular disease		Arteriosclerosis (all forms)	
	Male	Female	Male	Female
Australia [a]	57.3	60.3	36.2	30.2
Canada [b]	58.9	58.4	39.6	30.8
Denmark	51.8	52.7	30.3	26.0
Finland	49.3	55.1	30.1	22.6
France	35.2	38.1	6.4	4.8
Germany (Fed. Republic)	41.2	45.9	20.8	19.8
Italy	46.0	52.3	22.3	24.5
Japan	54.9	36.1	6.9	7.2
Netherlands	46.0	49.7	27.9	24.6
New Zealand [c]	56.3	59.6	35.3	27.8
Norway	46.9	50.6	24.0	19.3
Sweden	53.8	55.6	31.9	28.3
Switzerland	47.4	55.3	27.7	29.7
United Kingdom:				
England and Wales	52.0	58.4	31.8	30.6
Scotland	55.1	60.7	34.7	31.6
United States of America	60.4	61.4	40.2	33.9

[a] Excluding full-blooded aborigines
[b] Excluding the Yukon and North-west Territories
[c] Excluding the Maoris

arteriosclerosis takes the lead in most countries among the various other forms. It is generally followed by other types of myocardial degeneration, general arteriosclerosis and chronic endocarditis, in that order. In females, however, other types of myocardial degeneration frequently take first place.

Table II shows deaths attributed to arteriosclerosis in all its forms, and to coronary arteriosclerosis expressed as percentage of the total mortality from cardiovascular disease. These statistics reveal that cardiovascular disease and, in many countries, arteriosclerosis alone, cause more deaths than any other disease, cancer included. This significant fact indicates the importance of the problem which these diseases present at the present time.

TABLE II. DEATHS FROM ARTERIOSCLEROSIS (ALL FORMS) AND CORONARY ARTERIOSCLEROSIS EXPRESSED AS PERCENTAGES OF TOTAL DEATHS DUE TO CARDIOVASCULAR DISEASE ABOVE THE AGE OF 40 IN 1954

Country	Arteriosclerosis (all forms)		Coronary Arteriosclerosis	
	Male	Female	Male	Female
Australia [a]	63.1	50.0	42.9	26.0
Canada [b]	67.3	52.8	51.9	35.0
Denmark	58.4	49.4	41.2	29.8
Finland	61.0	41.0	37.7	17.0
France	18.2	12.7	13.5	7.7
Germany (Fed. Republic)	50.5	43.1	20.1	10.3
Italy	48.4	47.0	11.1	6.0
Japan	19.8	19.9	5.9	3.9
Netherlands	60.8	49.6	31.1	17.0
New Zealand [c]	62.8	46.7	45.3	25.7
Norway	51.0	38.2	34.0	19.6
Sweden	59.4	50.8	31.9	23.6
Switzerland	58.4	53.6	22.0	12.6
United Kingdom				
England and Wales	61.2	52.3	34.0	18.6
Scotland	62.9	52.1	34.6	19.0
United States of America	66.5	55.2	55.3	41.0

[a] Excluding full-blooded aborigines
[b] Excluding the Yukon and North-West Territories
[c] Excluding the Maoris

Reports of Expert Groups

VETERINARY PUBLIC HEALTH

One of the major activities in present day veterinary public health work is the effective control of those animal diseases which are capable of being transmitted to man—the zoonoses. Although it is not generally realized, these diseases are the source of much ill-health and poverty, brought about by acute and chronic infections they cause in human beings. They are also the cause of large economic losses in trade and agriculture.

The background to this and other major aspects of veterinary public health work has been examined at a meeting of the Advisory Group on Veterinary Public Health convened by the WHO Regional Office for Europe. The Group's report has just been published.[1]

The first question which must be asked in regard to any discussion on veterinary public health is that of the scope and definition of the work. What are the limits in this particular field of activity ? As a general description it could be said that veterinary public health protects and advances human well-being by utilizing the combined knowledge and resources of all those concerned with human and animal health and their interrelationships. Specifically, it is concerned with the control and eradication of zoonoses, the development and supervision of food hygiene practices, laboratory and research activities in diseases and conditions common to animals and man, and education and training of veterinarians. If the major aspects of veterinary public health work are considered individually, as they are in the Advisory Group's report, certain definite factors emerge. With regard to zoonoses, it is certain that the prevention and elimination of zoonoses in man depends in large part on the control of these diseases in animals. Experience has shown that these diseases cannot be fought satisfactorily by separate endeavours made by health and agriculture authorities. The best approach, as the report points out, is to achieve an effective attack on a specific zoonosis by co-ordinating the efforts of public health, agriculture and other groups.

Responsibilities for food hygiene

Another major aspect of veterinary public health work is food hygiene. Here the Group limited its debate to certain administrative problems encountered by governmental authorities in carrying out their food hygiene responsibilities effectively. This limitation was deliberate as the Group had noted that considerable technical attention is already being paid elsewhere to the question of food hygiene.[2] Nevertheless, the relation between food hygiene and veterinary public health is very close. The veterinarian, because of his special training, is pre-eminently qualified to supervise the major aspects of food hygiene. The Group was of the opinion that wherever possible, food hygiene responsibilities should be unified under one supervisory unit of the governmental services. It was felt that an appropriate unit would be a veterinary public health service. In fact, the important role which can be played by the veterinarian has already been recognized in certain countries where the public health administrations have been reorganized so as to allow a more

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1956, 111. 26 pages. Price: 1/9, $0.30, or Sw. fr. 1.—. Published in English, French, and Spanish.

[2] See *Wld Hlth Org. techn. Rep. Ser.*, 1956, 104, and also *Chron. Wld Hlth Org.*, 1956, 10.

important part to be played by the veterinary public health services. This trend has been particularly noticeable in some of the hitherto less well developed countries. Today, most national and large municipal health departments employ veterinarians to carry out one or more of the functions included under the general scope already mentioned for veterinary public health work.

Organization of public health services

Despite the fact that in some countries veterinary public health has been established in the health services as a distinct functional unit, certain other countries have made different arrangements. In fact, no single organizational or administrative pattern for veterinary public health activity can be given because of the varied conditions encountered in different countries. Similarly, the pattern of activity varies according to the level at which it is performed. The report of the Group examines what can be accomplished at the national, provincial, district and rural levels.

At the national level, veterinary public health units are usually part of the preventive medical services and the director of the unit is responsible for co-ordinating the veterinary public health operations within the over-all public health programme. He also advises the director of health on all problems that involve animal diseases and human health. The provincial officer also has an advisory capacity but his principal functions are to supervise and administer technical programmes concerned with zoonoses and food hygiene, and to co-ordinate local and national efforts in these spheres of activity.

The local public health unit often has a veterinarian charged with the supervision of zoonoses and food hygiene control; he is responsible to his colleagues in the national and provincial health departments, but must also assume responsibility for maintaining liaison with local groups interested in animal disease problems and public health. On the rural level, where people are, perhaps, most affected by the zoonoses, the veterinarian is rarely able to devote full-time activities to a single rural district. However, part-time work can serve as an important component in health efforts, and where there is a lack of veterinarians it is often possible to utilize the services of a trained assistant. It is stressed that rural veterinarians of this type occupy important positions of influence in rural communities because of their importance in the control of livestock diseases, often the most important factor in a rural economy.

Suggestions for eradicating bovine tuberculosis

With regard to the major zoonoses problems in Europe the Advisory Group examined the situation in the following: bovine tuberculosis, brucellosis, rabies and hydatidosis. Perhaps the most important of these is bovine tuberculosis, which in some parts of Europe is still a serious menace to human and cattle populations. As the report points out, for the effective control of bovine tuberculosis and its final eradication from the cattle population of the country, it is necessary to enlist the co-operation of all interested in public health and agriculture activities. In dealing with this most important question, the Advisory Group made six specific recommendations which could be adopted by government authorities in carrying out a bovine tuberculosis eradication scheme. They were:

" 1. The provision of adequate funds to ensure the payment of indemnities to farmers for infected cattle slaughtered, and to cover the costs of technical services involved in the various aspects of the field programme. For these purposes, funds should be obtained not only from agriculture and health ministries, but also from co-operating farmer and dairy organizations.

2. The establishment of a price differential for milk from tuberculosis-infected and tuberculosis-free herds.

3. The promotion of close collaboration and exchange of information between official medical and veterinary tuberculosis services

and other agricultural groups. This will facilitate the early tracing of sources of human infection from animals, so that appropriate action can be taken by both medical and veterinary authorities.

4. The use of common laboratory facilities for diagnosis, research and the preparation of biological products used in the control of tuberculosis.

5. The education of the public, in particular the rural population, on the danger of bovine tuberculosis for man, and in the public health and economic advantages derived from its eradication. The full support of the public, both urban and rural, is absolutely essential to the success of any control programme.

6. The organization of national advisory councils to guide and assist in the over-all control programme. Membership of this council should include representatives of the government, of medical, veterinary and other professional societies, of farmers and consumers, and of other interested groups."

If steps such as those outlined above are going to be taken they must be complemented by suitable training for veterinarians. It is also important that personnel engaged in public health activities should have the opportunity from time to time to attend refresher courses so that their knowledge may be kept up to date. Indeed, as the Group points out, the demands of public health on the veterinary profession can only be met if the veterinarian has been suitably trained for his work. In education, he should be made familiar with the philosophy of the national public health programme, and early in his student years should be imbued with the idea of public service. Opportunities should be afforded so that he may learn the part a veterinarian should take in promoting community health and national welfare, including the philosophy and operation of national public health programmes. The responsibility for this enlightenment lies primarily with veterinary institutions, whether they be universities or autonomous colleges, and due cognizance of this need should be taken in the curricula of veterinary schools. Equally, post-graduate study by veterinarians in schools of public health, working in close collaboration with physicians in the same classes, is an essential step in providing the trained personnel necessary to carry out adequately any modern public health programme.

DIAGNOSIS AND TYPING IN LEPTOSPIROSIS

Those animals which commonly carry leptospires—rodents of various types, pigs and dogs—act as hosts for a large number of different species of these micro-organisms. Although the same species are often found in different animals, each species appears to have a preferred animal host, which is not only the animal most often infected but also the eliminator of the leptospirae and the means of propagating the infection which it produces. Human beings can be infected directly by the animal carrier, but infection usually occurs by the carrier eliminating leptospirae with its urine and thus contaminating the environment, particularly water.

A large number of differing types of leptospires have been discovered, with definite host-parasite relationships. These strains have different antigenic structures. To differentiate between these types serological reactions rather than clinical symptoms must be relied on. However, the great diversity of methods and techniques for differentiation is a source of confusion and makes comparison of results obtained in laboratories in different parts of the world exceedingly difficult.

In order to lay the foundations for a standardization of techniques used in the diagnosis of leptospirosis and the typing of

pathogenic strains, WHO convened a study group, whose report has just been published.[1]

The report stresses that agglutinogens, determined by agglutination and cross-absorption reactions with immune rabbit serum, remain the best criteria for the classification of the leptospires into serotypes. Standardization of sera, i.e., specific reference sera to be made available to research workers, is one of the fundamental requirements for standardization techniques. The group examined the results of comparative assays of sera corresponding to six serotypes of leptospires carried out by eight laboratories in different countries. The conclusion reached by the group was that reference sera should be prepared, as far as possible, for all the types and subtypes at present well established, and should be made available in the form of freeze-dried preparations. Reference laboratories, set up in various parts of the world, in collaboration with FAO, would then receive the sera and hold them in readiness for supply to national laboratories and specialist research workers. These laboratories would also provide cultures of leptospiral strains and would assist workers wishing to identify and classify new strains. An additional duty of the reference laboratories would be to train specialist laboratory technicians.

Following the recommendations made by the study group, reference centres for leptospirosis have already been designated at Amsterdam, London, Tokyo, and Washington, D.C. (Additional centres are expected to be designated in the near future.) It is hoped that early in 1957 reference sera will have been prepared for the main serotypes of *Leptospira*.

With regard to the problem of diagnosis, the group describes in the report those methods which it deems particularly suitable for this purpose, namely, blood culture and animal inoculation in the initial stage of the disease, and during the second and third weeks the agglutination-lysis test, straight agglutination (microscopic) and the complement-fixation test (of restricted application at present).

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1956, **113**. 11 pages. Price: 1/9, $0.30, or Sw. fr. 1.—. Published in English, French, and Spanish.

Notes and News

Health services in the Seychelles

The WHO public health team at work in the Seychelles Islands, which lie roughly in the middle of the Indian Ocean, consists of an Austrian doctor, a sanitary engineer from Haiti, a Danish nurse and a laboratory technician from Cuba. With the support of the local administration, the public and the press this small team has undertaken the task of organizing an improved system of health services. Money is not plentiful and the islands to be covered are numerous and far-flung. However, with the aid of films, lectures and WHO fellowships for study in Tanganyika, Malaya and the United Kingdom, much progress has been made. It is indeed interesting that some of the short documentary health films shown in the outlying islands are in fact the first films ever seen by the local inhabitants.

The main task of the team leader, the doctor, who is assisted by the laboratory technician, is to carry out a morbidity survey in order to evaluate the prevalence of disease among the population and to determine economical methods of control. Although the Seychelles are free from malaria, other parasitic diseases are present. The survey has so far revealed that not a single house or family is free of parasites. In many cases the reason for this is the contamination of the soil in the immediate vicinity of the

dwellings. It is this problem with which the sanitary engineer is chiefly concerned.

The public health nurse makes personal contact with the womenfolk in their homes and thus is able to assess the magnitude of some of the health problems and at the same time offer useful advice, particularly with regard to the care of children.

Antituberculosis campaign in the Sudan

A team consisting of an Egyptian doctor, a Norwegian and an Italian nurse, has been appointed by the WHO Eastern Mediterranean Regional Office to assist the Government of the Sudan in its campaign to control tuberculosis by BCG vaccination. The team leader, Dr Mohamed F. Y. Khorshed, was until his secondment inspector of the Chest Diseases Section, Ministry of Public Health, Cairo.

The Sudan Government is planning to undertake the second phase of a mass BCG antituberculosis vaccination campaign in the southern province, and in part of the central province, in which two million persons will be tested and 700 000 vaccinated. In the course of the next two years the Sudanese Ministry of Health will provide four teams of doctors and vaccinators operating in two stations and two sub-stations. The major part of the supplies and equipment will be sent to the Sudan by UNICEF.

African seminar on vital and health statistics

In order to explore ways and means of improving or inaugurating medical statistical services in Africa, the Commission for Technical Co-operation in Africa South of the Sahara (CCTA) and the World Health Organization convened a seminar on vital and health statistics in Brazzaville, French Equatorial Africa, from 19 to 24 November 1956. The 20 participants came from a number of different African countries or territories.

In Africa, satisfactory vital and health statistics services exist only in those urban centres where there are enough physicians to certify causes of death and where there is adequate administrative machinery to collate the information thus obtained. The seminar, therefore, had to consider not only the most practical and economical ways in which machinery to meet statistical needs could be developed but also temporary makeshift solutions and the best ways of taking advantage of what sources of information were already available. It was felt, both by health authorities in Africa and by all other branches of the administrations, that adequate planning in all fields of government required a knowledge not only of the geographical distribution and of the age and sex composition of the population, but also of its expected rate of growth.

It was considered that the records of hospitals, medical outposts and mobile medical units were the best sources of information on morbidity if not on health in general. Vital registration, where it existed, was of course the basic source of information on mortality. With a view to developing vital registration the seminar participants discussed what types of person might usefully serve as substitutes for the regular type of civil registrar. It was also agreed that non-medical persons, such as village headmen, could in selected areas report on rough age and sex distribution and on crude causation of death. Another matter discussed was how estimates, based, for instance, on tax registers and voters' registers, could replace complete census enumerations, and what particular details might be elicited from sample surveys. The training of various types of officials required for vital registration was also considered.

One of the main conclusions of the seminar was that the need was to obtain numerical information which could serve as a practical guide to health and other administrations rather than to produce orthodox statistics for international publication.

While the primary object of the seminar was the improvement of statistical procedures in Africa, its observations and conclusions might equally well have been made regarding under-developed areas in other parts of the

world. The WHO Expert Committee on Health Statistics, which met in Geneva a fortnight after the African seminar, was therefore able to gather from its report practical suggestions which will be brought to the notice of health administrations in other continents.

World Health Day 1957

World Health Day 1957 (7 April) will have for its theme " Food and Health ", and will be sponsored jointly by WHO and FAO. This announcement was made by the Director-General of WHO in a recent letter addressed to all Member States. Underlining the importance of the chosen theme the Director-General's letter stated, *inter alia*:

There is, I believe, no country in the world which is not faced with serious problems concerning one or another aspect of the relationship between food supplies, food habits and health situation of its people. It is hoped that, as in past years, health administrations will find World Health Day a valuable occasion for making the people of their countries aware both of the broad international importance of this subject and of its particular significance in the national context.

On previous occasions executive heads of other specialized agencies have expressed their interest and goodwill with respect to World Health Day observance. In 1957 for the first time, however, the World Health Day theme is one of equal concern to another of the specialized agencies, in this case the Food and Agriculture Organization, and World Health Day preparations are therefore being made conjointly by our two organizations.

Mental health work in Jordan

One of the papers submitted to the WHO Expert Committee on Mental Health, which met in Geneva between 10 and 15 December 1956, reveals that the mental health services in Jordan have much improved over the past three years, due substantially to the assistance rendered by WHO.

In the Government Mental Hospital at Bethlehem, insulin treatment has been introduced for the first time and electroconvulsive therapy is now carried out as part of the regular treatment. Other types of physical therapy are also being brought into use. The nursing staff of the hospital has received instruction on modern methods of dealing with psychiatric patients and student nurses are given courses in the Bethlehem Hospital lasting for some weeks. The United Nations Relief and Works Agency has assisted the hospital financially and has also appointed a physician to look after the refugee patients in the hospital. Finally an out-patients clinic has been organized and patients visit it from all parts of the country.

Africa lacks nurses

One of the main obstacles to the development of public health services in Africa is the shortage of nurses.

In an attempt to improve present conditions, Miss L. Creelman, Chief of the WHO Nursing Section, visited a number of African territories (British Somaliland, Uganda, Zanzibar, Bechuanaland, Mauritius and La Réunion) in order to assess the present situation and to study the measures to be taken in case WHO assistance should be requested. For the same purpose, another WHO nursing consultant, Miss Rosemary Hale, visited the Gambia last August.

In Africa the task facing the nurses is overwhelming. Matrons and senior nurses are fully occupied with everyday activities, and they have only little time for teaching purposes. Even the students themselves have to devote most of their time to routine work, so that they lack opportunity to improve their knowledge. In many instances, there is a severe shortage or even a lack of classrooms and teaching equipment. Finally, the steadily growing number of patients imposes an ever-increasing burden on the nurses, so that only little attention can be paid to prevention and health education.

Formation of a picked body of nurses is a long-term undertaking. The girls sent for training by governments, sometimes with the

assistance of WHO, to Europe or the United States, do not return for two or three years. It is often difficult to divert a nurse from her service for additional training, because there is no replacement and work must continue.

On-the-spot training of a new candidate also entails from three to four years to make a good nurse or a good midwife.

In addition to the nurses, both male and female, who were recently sent by WHO to Turkey to perfect their knowledge in the field of tuberculosis control, three other nurses from Mauritius, Bechuanaland and Tanganyika were awarded WHO fellowships. Two of them are now attending a two-year course in London, and the third is making a six months' visit to the United States. Upon their return, their task will be to train other nurses.

Death of Dr Louis Findlay

A public health worker who devoted the major part of his professional career to the organization and development of health services for the care of refugee populations in the Middle and Far East, has recently died in London. Dr Louis Findlay, from Scotland, was Chief of the Health Division and the WHO representative to the United Nations Relief and Works Agency. He was also Clinical Professor in the School of Public Health of the American University of Beirut.

Dr Findlay's division in UNRWA was responsible for the direction of the health services provided by WHO for the 900 000 Palestinian Arab refugees whose care and well-being is the concern of the agency. To this task Dr Findlay brought to bear experience and qualifications which were outstanding. He was no stranger to the refugee problem as from 1951 to 1953 he had served as Chief Medical Officer to the United Nations Korean Reconstruction Agency.

In dealing with the health problems of refugees Dr Findlay always revealed his exceptional ability and humanity. International medicine has indeed lost one of its most valuable members and ardent supporters.

Appointment of new WHO Representative to UNRWA

Dr J. S. McKenzie Pollock, who succeeds Dr Louis Findlay, has now taken over his new assignment. A staff member of the World Health Organization, Dr McKenzie Pollock has been seconded to UNRWA after a four-year assignment as Public Health Administrator in WHO's Regional Office for South-East Asia in New Delhi. There Dr Pollock was responsible, under the Regional Director, for helping to formulate programmes in communicable disease control and the development of health services in the countries of the region.

Dr Pollock holds degrees of M.B., Ch.B. and D.P.H. from Glasgow University, and S.M. from Harvard University. He is also a Fellow of the Royal Society of Tropical Medicine and Hygiene. For some years he held the post of Chief Medical Officer in the British Solomon Islands Protectorate.

Review of WHO Publications

MALARIA

Bulletin of the World Health Organization, 1956, Volume 15, Numbers 3-4-5 (pages 361-862).

Most of the articles in this number of the *Bulletin* were prepared for the Second African Malaria Conference, held in Lagos in November 1955, the Inter-regional Conference on Malaria for the Eastern Mediterranean and European Regions, held in Athens in June 1956, and the sixth session of the WHO Expert Committee on Malaria. In the first article, " Theory of the Eradication of Malaria ", Macdonald analyses the process of malaria elimination, the detection of residual foci and the events following the reintroduction of the disease, and presents a mathematical study of the production of epidemics from small origins, on the grounds of the basic reproduction rate. The paper also gives guidance to administrations that propose to establish a surveillance system after the spraying campaign is over. Surveillance itself is the subject of notes by Ch'en & Liang, Ayurakitkosol & Griffith, and Gunaratna, who describe the systems adopted in Taiwan, Thailand and Ceylon, respectively.

Several contributions deal with the resistance of anophelines to insecticides. Busvine, besides writing at some length on the significance of the phenomenon, presents a short survey of measurements of the susceptibility of different mosquitos to insecticides. Livadas & Thymakis relate their observations on the resistance of adult mosquitos to DDT in Greece, while Belios & Fameliaris describe their findings with regard to *A. sacharovi* larvae, which have recently developed resistance to chlordane and dieldrin in the same country. Chow & Soeparmo report on DDT resistance in *A. sundaicus* in Java.

Research on entomological problems relating to malaria is the subject of several articles. Frizzi & Holstein record the finding of an extremely pronounced polymorphism of chromosomes in the salivary glands of fourth-stage *A. gambiae* larvae. This is the first study on the cytogenetics of this species, and for the first time a mapping of its chromosomes is now available. Other studies on *A. gambiae* which appear here deal with its exophily (Gillies), with the presence of a " mating plug " which makes it possible to recognize nulliparous *gambiae* females (Gillies), and with its biological variations in different regions as compared with similar variations in *A. darlingi* (Giglioli). Gramiccia contributes a note on *A. claviger* in the Middle East, and Farid one on the implications of *A. sergenti* for malaria eradication programmes east of the Mediterranean.

More general articles on research include a paper by Weitz on the identification of blood meals of arthropods; an article on the use of radio-isotopes for research on and control of mosquitos, by Bruce-Chwatt, who also presents an original biometric study which was carried out on a large number of autopsies to determine the weights of the liver and the spleen in Africans and Europeans, with special reference to endemic malaria; and a note by Edington & Lehmann on the interesting and controversial problem of the relationship between the sickle-cell trait and malaria in Africa. The influence of malarial infection of the placenta, so common in equatorial Africa, on the incidence of prematurity is discussed by Archibald; while Garnham draws attention to the difficulties caused by the presence of microsporidia in laboratory colonies of *Anopheles*, one of which is the possibility that pansporoblasts,

lying on the wall of the mosquito's stomach, may be mistaken for oocysts. Anophelism in Africa is a subject of great interest, and an address entitled " Aspects of Malaria Vector Research in Africa ", which was delivered by de Meillon at the Lagos conference in November 1955, is reproduced in this issue. The distribution and habits of the anophelines in French West Africa, French Equatorial Africa and the Cameroons are described by Hamon, Adam & Grjebine, and Grjebine presents a survey of the anopheline population of Madagascar.

Following is a series of papers on the epidemiology and control of the disease in different areas. This series begins with an article by Macdonald on the epidemiological basis of malaria control which, in non-mathematical language, describes the typical " stable " malaria found in equatorial Africa. The situation in tropical Africa in general is covered by Bernard; that in West New Guinea is described by Metselaar, who points out that the holoendemicity of malaria in the territory does not entirely fit in with the definition of holoendemicity given for Africa; and the position in Sarawak and Brunei and in the interior of Borneo is dealt with by de Zulueta in two papers, the second of which is written in collaboration with Lachance. It is in these two papers that the satisfactory results of residual-insecticide spraying against malaria carried by the *A. leucosphyrus* group are reported for the first time. Archibald describes the epidemiology of malaria in Northern Nigeria, and Joncour malaria control in Madagascar. Ciuca discusses the position with regard to malaria in Romania, and Simič does the same for Yugoslavia.

Finally, two papers deal with malaria control by drugs: the first is by Houel, who describes the use of different drugs for mass treatment in Morocco; the second is by Archibald & Bruce-Chwatt, who used pyrimethamine successfully, over a two-year period, to suppress malaria in Nigerian schoolchildren.